Wildlife Services Seeking Solutions Through Research

United States Department of Agriculture

Animal and Plant Health Inspection Service

National Wildlife Research Center

Wildlife Services National Wildlife Research Center: Leader in Nonlethal Wildlife Damage Solutions

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USDA Scientists Apply Wildlife Biology Expertise to Wildlife Conflicts

The National Wildlife Research Center (NWRC) is the research arm of the Wildlife Services (WS) program. WS provides Federal leadership and expertise to resolve conflicts between people and wildlife. NWRC supports this effort with scientific research to develop selective, effective, and socially acceptable methods for resolving damage and reducing risks posed by wildlife. This very focused mission makes the Center unique not only in the United States but also around the world. NWRC conducts research to protect crops, livestock, timber, property, and natural resources. NWRC scientists are also engaged in research related to public health and safety in order to protect humans from wildlife-borne diseases, dangerous invasive species, and wildlife hazards at airports.

Recent NWRC research accomplishments are numerous and have focused primarily on nonlethal wildlife management tools and methods. In fact, many of the nonlethal methods used today by Federal, State, and private sector wildlife professionals have stemmed from research conducted at or through the Center.

Nonlethal research has led to the development of numerous techniques to reduce wildlife damage and resolve conflicts between people and wildlife. For example, NWRC has developed immuno-contraceptives to manage overabundant wildlife populations, chemical repellants to protect various crops, hazing and harassment techniques to disperse large bird roosts, and wildlife habitat management strategies to discourage the presence of wildlife in problem locations.

Protecting Urban Property and Resources

Golf course greens and other turf areas often attract birds, especially geese. These geese contaminate turf and ponds with fecal matter and feed on the lush grass. When nesting, some geese also show aggressive behavior toward people, creating quite a nuisance. NWRC researchers were instrumental in providing information that enabled the Environmental Protection Agency (EPA) to register Methyl Anthranilate (MA) as a geese repellant for use on turf and standing water. MA is ingested and inhaled by the nuisance geese, producing irritation and discomfort that causes the birds to stop feeding and leave the area.

NWRC was also successful in getting Federal Drug Administration (FDA) approval for the use of alpha-chloralose, a chemical that acts as an immobilizing agent on waterfowl, pigeons, ravens, and coots. When the birds receive a dose of the chemical, they become sedated allowing specialists to humanely capture and relocate them from areas where they are damaging property or threatening people.

Beavers also cause significant damage to a variety of resources when they engage in dam-building activities. Crops and timber can be especially impacted by these activities. NWRC has developed a textural repellant, containing grit, for application to trees and ornamental plantings. When applied, the repellant makes trees and plantings undesirable to beavers and minimizes the amount of damage they cause.

Protecting Agricultural Crops and Aquaculture

Birds can cause significant damage to fruit and grain crops. For years, farmers have been concerned about the damage that

blackbirds cause to sunflower crops in the Dakotas. When large flocks of blackbirds roost in cattail wetlands next to sunflower fields, the damage to sunflower crops can be quite extensive. NWRC scientists have conducted studies that document the safety and effectiveness of an aquatic herbicide that thins cattail stands and therefore reduces the number of blackbirds roosting in them. This, in turn, reduces damage to sunflowers.

Birds can also cause a great deal of damage at fish farms and other aquaculture facilities. Currently, NWRC is investigating the migratory movements and feeding behavior of fish-eating birds, especially cormorants. With this knowledge, NWRC scientists are working to develop harassment technology in order to effectively disperse cormorant roosts. NWRC researchers have already perfected the use of low-powered, nonlethal lasers for dispersing birds.

Protecting Air Passengers and Aircraft

Wildlife that linger around airport runways have been an ongoing concern for NWRC researchers and many airport managers. Over the years, aircraft have been severely damaged by wildlife collisions, and in some cases, passengers have even been killed. Bird strikes with airplanes cost U.S. civil aviation more than $470 million annually. NWRC has been a major leader in researching and developing harassment techniques to disperse birds and other wildlife from airports. More recently, NWRC efforts have helped to modify the habitat around runways in order to discourage nesting, feeding, and loafing by wildlife. NWRC, along with the Federal Aviation Administration (FAA), produced the first wildlife management manual for airport managers. This manual has been distributed by the FAA to all certificated airports nationwide. In addition, NWRC maintains the National Wildlife Strike Database, which is used by the FAA and airports to monitor trends and wildlife species that pose the greatest concern to aviation.

Protecting Threatened and Endangered Species from Predators

Predators can have a major impact on declining numbers of wildlife species. When this happens, WS' expertise is often called upon by State and Federal agencies or environmental groups to reduce predation on these rare wildlife species. WS frequently relocates or excludes predators from areas where threatened and endangered species are close to extinction because of predation. Repellants can also be an effective tool for keeping predators away. NWRC was successful in obtaining EPA registration for Methiocarb, a nonlethal chemical that deters ravens from preying upon the eggs of endangered least terns. The chemical is applied to substitute eggs that resemble those of the endangered least tern. When ravens eat the substitute eggs, they become sick and quickly develop an aversion to consuming similar-looking eggs.

Protecting Livestock

Protecting livestock from predators has always been an important part of WS' mission. The need for acceptable and effective predator management tools is imperative in order to protect public safety and reduce livestock losses. Until recently, WS relied on tools and methods that, while successful, were developed decades ago. Recent restrictions on the use of some of these tools, has led NWRC to test a wider array of nonlethal tools and methods that minimize predation on sheep, cattle, and goats. NWRC has been prolific in

furthering the scientific knowledge-base in this area. NWRC scientists are currently developing a prototype animal-activated electronic device that repels predators from livestock areas.

NWRC has also investigated how surgically sterilizing adult, territorial coyotes impacts livestock predation. Studies revealed a six-fold reduction in predation on sheep when compared with unsterilized, territorial coyotes. This research sprang from previous NWRC research, which found that adult coyote pairs without pups prey on sheep, cattle, and goats less than coyotes with pups to feed.

NWRC has made significant contributions to many fields of wildlife damage management. The scientists working at NWRC are dedicated to resolving conflicts that arise between people and wildlife. Through their efforts, NWRC scientists provide WS field biologists, and those who struggle with wildlife damage, an array of tools and methods that they can employ and adapt to resolve wildlife conflicts. NWRC scientists are concerned about the welfare of all animals, and they look for solutions that are science-based, environmentally sound, affordable, and effective. This critical research ensures that the broadest array of wildlife damage management tools will continue to be available for use by WS biologists, as well as State wildlife agency professionals, landowners, and others.

Selected Publications

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- Homan, H.J., G.M. Linz, R.L. Wimberly, and L.B. Penry. 2001. Progress on cattail management to reduce blackbird damage to sunflowers. Pages 144-146 in Proceedings of the 23rd Sunflower Research Workshop. Fargo, ND. National Sunflower Association, Bismarck, ND.

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- Miller, L.A., B.E. Johns, G.J. Killian. 2000. Immunocontraception of white-tailed deer with GnRH vaccine. *American Journal of Reproductive Immunology* 44:266-274.